

What is claimed is:

1 1. A method of compression of an arbitrary topology
2 surface, comprising:
3 obtaining an input representation of the topology;
4 forming a semi-regular mesh representing a geometry of
5 the surface where at least one vertex of the semi-regular
6 mesh is in a different location then a vertex of the
7 original input representation; and
8 forming a compressed version of the semi-regular mesh.

1 2. A method as in claim 1, wherein said forming a
2 semi-regular mesh comprises sliding at least one vertex
3 within a surface of the topology, to a location where
4 better compression can be obtained.

1 3. A method as claim 1, wherein said obtaining a
2 semi-regular mesh comprises changing a location of samples.

1 4. A method as in claim 1, wherein said compression
2 comprises changing connectivity between vertices.

1 5. A method as in claim 1, wherein said forming
2 comprises carrying out a wavelet transform to replace the
3 original mesh with a coarse semi-regular mesh, and a
4 sequence of wavelet coefficients.

1 6. A method as in claim 5, wherein said wavelet
2 coefficients define a difference between a current mesh and
3 a more detailed mesh.

1 7. A method as in claim 1, wherein said forming a
2 semiregular mesh and said forming a compressed version
3 further comprises forming a coarsest mesh, and carrying out
4 a transform which removes correlation between vertices of
5 remaining portions of the mesh.

1 8. A method as in claim 7, wherein said transform
2 includes a Loop based wavelet transform.

1 9. A method as in claim 7, wherein said transform is
2 one used for high order decorrelation and subdivision based
3 reconstruction.

1 10. A method, comprising:
2 obtaining information on a three dimensional part,
3 including parameter information that is described by
4 displacements in the tangent plane to the surface and
5 geometry information, that is normal to the surface; and
6 compressing said information by allocating bits
7 preferentially to the local normal direction.

1 11. A method as in claim 10 wherein said compressing
2 comprises first forming a mesh of parameter information
3 that is more regular than an original.

1 12. A method as in claim 11, wherein said compressing
2 comprises uneven scaling of tangential and normal
3 components of said residuals.

1 13. A method as in claim 11, wherein said more
2 regular meshes have substantially only normal prediction
3 residuals.

1 14. A method as in claim 11 wherein said compressing
2 comprises Subsequent hierarchical transformation of such
3 meshes through a hierarchical transform.

1 15. A method as in claim 14, wherein said transform
2 is based on subdivision methods.

1 16. A method as in claim 14, wherein said transform
2 includes a wavelet transform.

1 17. A method as in claim 15, wherein said transform
2 is a wavelet coefficients with a zero tree style coder.